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USSR MICROBIOLOGISTS SOLVE PROBLEMS IN CONNECTION WITH FOREST PLANTING IN THE STEPPES

The planting of forests in the steppes, which is being carried out in accordance with the Stalin plan, required the solution of several important scientific problems. One of the problems consisted in the slow germination of seeds. For instance, an acorn germinates only on the 40th day after planting, a seed of the yellow (Siberian) acacia (Caragana arborescens) several months after planting, and a linden seed 2 years after planting. An investigator at the Institute of Agricultural Microbiology, Candidate of Biological Sciences Ya. P. Khudyakov, established that delayed growth of tree seeds which follows the period of ripening is due to the accumulation of specific toxic substances. This is a form of adaptation of the plant organism to external conditions.

Khudyakov found that the inhibiting toxic substances can be inactivated by a special oxidizing solution. On treatment with Khudyakov's solution, seeds of any species of tree germinate within 3 days.

Most species of trees belong to the mycotrophic class of plants, i.e., plants which are able to obtain nourishment only with the aid of mycorrhiza (root fungi). Every species of tree requires a specific type of Mycorrhiza. The soil of steppes does not contain any mycorrhiza, so that hundreds of tons of soil must be transported in connection with tree planting. Hitherto it has not been possible to separate mycorriza from the soil and to breed pure cultures of it under laboratory conditions. Doctor of Biological Sciences K. I. Rudakov, Ya. P. Khudyakov, and other investigators connected with the Moscow Affiliate of the State Institute of Agricultural Microbiology devised a synthetic nutrition medium containing 28 factors of the vitamin complex [literally "consisting of 28 elements of

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the vitamin complex"7. In this nutrition medium, seven species of mycorrhiza were successfully grown. The scientists referred to above also developed procedures for the conservation and transportation of mycorrhiza cultures.

Mycorrhiza packed in ampules has been distributed to forest planting stations for introduction into the soil during the spring of 1950. Each ampule contains 2 grams, a quantity equivalent in its action to that of one ton of forest soil. Fifty thousand ampules have already been produced by the Institute of Agricultural Microbiology.

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